Friends, Donors, and Fellow Lovers of Liberty,
In the last update, I discussed the tentative path forward with regards to the assembly machine itself and the injection molded jackets which are the apparent final barrier to imminent release. I can now share more concrete and final news on those fronts, as well as yet another contingency we've had to develop since my last correspondence.

The injection molding process is fully developed.

After a long while of low priority and **very slow support from the subcontractor** which caused its implementation to drag, the **valve gate was successfully incorporated** onto the prototype mold, and did significantly improve part quality, specifically in "packing-out" the volume of the mold cavity to a greater degree, and elimination of the gate vestige on the floor for which it was expressly purposed. However, the **valve gate also created a broader bump on the floor**, technically distinct from the vestige, but functionally identical for our purposes of stability in the production machine, as any convexity in the floor causes jackets to sit canted. The canting in-turn causes the curing adhesive to pool into an asymmetrical moat (producing an unbalanced bullet) and dramatically slows stoppage-free production rate. Still, the field representative of the valve gate manufacturer remarked at the molding shop, "I have to take some pictures for the guys in the office; they'll never believe you were able to pull this off," suffice to say that the **jacket molding is now at a point of unimprovable development**. All the cards have been played and they just can't be made any better, standing at the limit of current injection molding technology.

Further attempts to mitigate the bump were only somewhat successful, but did conclusively reveal the dependency order of the various mold dimensions to prescribe a confident plan to build and tune the production molds as quickly and simply as possible with the complete knowledge gained from these prototype mold investigations. In the next week or two, a rebuild of the prototype mold core pin will provide us with jackets which, while not completely within production tolerances, will be close enough to tune our assembly machine, as well as the new machine discussed below, and provide final verification to commission construction of the production mold, which *will* produce jackets of proper tolerance. At this point, **there is no foreseeable detour for jacket production** as all possible methodological options have now been investigated and a clear production mold development route has been discerned.

We are building a new machine to trim the jacket bump.

No technique able to mold a flat floor surface, the problem fell back to us for solution. Rather than double the assembly machines required for a same production capacity and still suffer greater process instability for as long as we produce these projectiles, we moved quickly to build an additional automated machine solely purposed to trim the bump flush with the rest of the floor. **This has been a major unexpected undertaking**, both in terms of our time and funding, but as of Friday, we are already pulling jackets from the machine which are almost as stable as our machined developmental prototypes, certainly "good-enough". As the several weeks elapse until we have production jackets, **we will continue to perfect the flatness** achieved by the floor-trimming machine for added stability **and complete the mechanisms which handle the jackets** into and out of the machine. While this trimmer machine can't quite

keep pace with the production rate of the projectile assembly machine, we will build a more capacious, “heavy-duty” model when production cash flow permits.

All aspects of the assembly machine are fully functional.

While various tweaks are still in progress, all parts and aspects of the assembly machine are functional such to enable the machine to run at full speed, despite lack of convenience for the operator. **These remaining changes are mostly in projectile off-boarding** from the machine, either to smooth the projectiles’ path or to positively locate and fix curing trays to the machine, but are not critical for unhampered operation. These small fixes will be implemented in short order, and assembly of the other curing trays will be conducted while we wait for the production jacket mold. As of now, a single curing tray has been constructed, while 15 more are required to collect and cure 2 days worth of projectile production, the time allotted in the special chamber for the adhesive to cure, so that the operator need not tediously transfer the uncured projectiles by hand when full to resume operation. As simple as these trays may seem, structurally composed of laser-cut sheet aluminum and special 10mm T-slot rails, their design is deceptively complex, requiring 2-3 man-days each to post-process components and assemble. Of course these are of low priority, and we will likely begin production before all are assembled.

Core consistency, appearance, and cost may improve.

In effort to improve on core (and in-turn ballistic) consistency, we sought to have the screw machine shop we’ve contracted to turn cores specify the parts by weight rather than the length dimension. This seems to have spooked them such that they referred us to an altogether different shop, one which specializes in single-spindle and escomatic machines. For only a few cents of cost increase, **these machines promise a better surface appearance, improved tolerances, and to eliminate the part-off nib**. Beyond this, the escomatic option may enable use of coil stock to **significantly decrease Piggy Popper material cost**. The trade-off for these benefits is that we face many weeks of tool-up lead time and many more of these machines are required to feed our assembly operation relative to the multispindle screw machines. We are presently waiting for samples and time will tell if we commit to the switch at all, and if so whether it will be before or after the first production batch.

Surely since the last update, the **birth of my daughter has slowed progress a bit** because I’m less free to work at night and on weekends and have found want of sleep, as is typical. Obviously the jackets have been the point of uncertainty for quite some time and largely beyond our control. Now what’s left unknown of the jackets is in-house and under our devoted care, rather minor, and moving very quickly, which **causes me to be relatively comfortable with our present position**, though still ever-vigilant.

If you have donated at least $50 and have not received one, **email us if you’d like a keychain**. These were intended for those who donated before the crowdfunding goal was reached, but we have enough left to extend the offer. We handmade these and their likes will never be made again or offered for sale, only given to proven friends of Atlas Arms.

To our knowledge, there are already at least **3 independent users working to DIY Dagger-tech bullets** from the published patent, despite that the proper FOS manual is still on

hold so we can focus on commercial production. Indebted to you donors and no one else, we have prioritized the commercial aspect as we sense that most of you would rather have it in hand than detailed instructions to make it, but we know there are those of you who may feel differently. Tell us if so, and I'll prioritize the manual if it seems the donors in general demand it.

Reach out any time by email or through Twitter. Tell us you're a donor to warm our reception.

--Austin Thomas Jones
Chief Engineer, Atlas Arms
austin@atlasarms.org