

**Twist Drills, Collets and Chucks,**

For many years twist drills have been made by machinists for the purpose of constructing fine, delicate machinery when exactness was absolutely necessary to carry out the ideas of inventors and mechanics. The old-fashioned tedious method of forging, twisting, centering, turning and filing into shape—made a drill of half-inch in diameter cost from \$2 50 to \$3 50; even at that price it was considered cheap, as it did work which could not be performed by any other drill. To cheapen the cost of production, many of our best machinists who carried on business largely, got up small fixtures attached to lathes to cut the grooves in the drills after they were turned, and then finished them as usual by hand. Thus each company were obliged to make tools first before they could make drills, and then could only make a limited number of sizes. Here, then, was a demand for a new business, and Mr. S. A. Morse, of East Bridgewater, Mass., perceiving it, set about the invention of a machine which should take a piece of steel turned to size, and complete a drill ready for hardening, almost at one operation. This was effected in May, 1862, when he produced a drill upon which he obtained a patent; the features are a groove so cut

direction by means of the screws before mentioned. To fasten this tool to the lathe, a mandrel must first be fitted to the spindle and turned on the outer end to fit the hole in the shank, G, of the chuck.

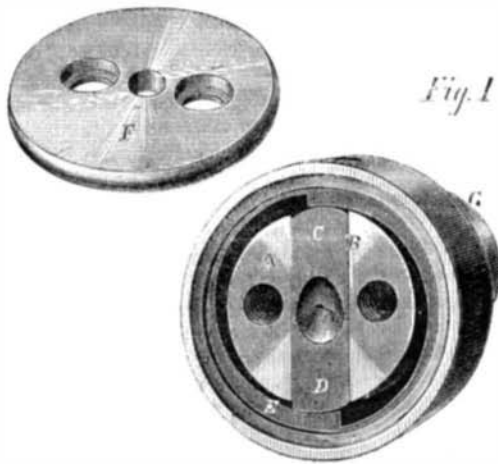
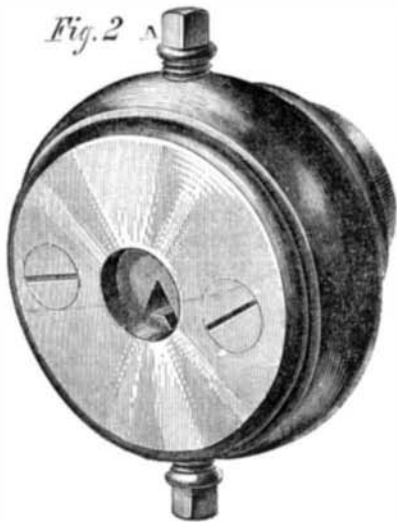
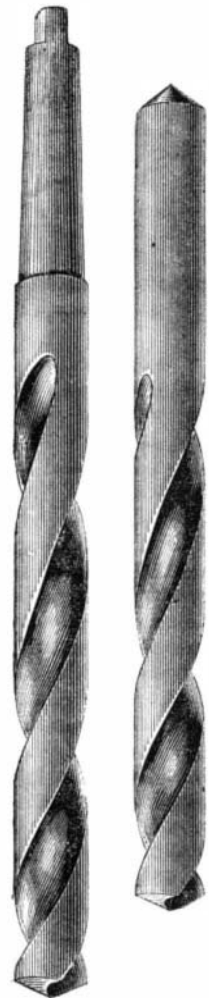
Fig. 2 is a cheaper adjustable chuck for holding drills from one-sixteenth to one-half inch in diameter. It is constructed like the others, except in the place of the cams there are two screws, A, to adjust the drills in the center; a wrench for the screws accompanies the chuck.

These drills are first-class tools in all respects; they drill a round hole to the shank without removing them from the work. Metal workers know that there is nothing more obstinate or annoying to drill than a composition of copper, tin and lead; this catches every sharp-edged tool which works in it, but we have found these drills to run through it with ease, removing the metal in long spiral shavings, without being heated or clogged. If a drill will work in this metal, it will in anything, and the celerity with which a hole is bored through cast or wrought iron, is surprising. These are first-class goods, and are now in use in most of our large shops, armories and private establishments throughout the country. They are now manufactured at New Bedford, Mass., by the

in the engraving, the cravat and collar can be used as man and nature intended them to be.

This appendage consists of a pin, A, formed with a spring back, B, so that when it is applied, as shown in Fig. 2, section, both the cravat and collar will be

Fig. 3.



**MORSE'S TWIST DRILLS, COLLETS AND CHUCKS.**

or formed as to present a straight cutting edge to the metal, with a decrease in the angle of the groove as it advances towards the shank, the groove being a taper from near the point to the shank; at the same time the width of the groove is increased in the same direction in order to give a great capacity for borings at any point in the drill as there is at the cutting end, while the drill is thus made stronger as the groove advances. The small drills are made from Stubbs's steel wire, including all the sizes of his steel wire gage. Some gages have 80 sizes. The larger drills, from three-eighths to one and one-fourth inches, are made from the best cast steel, with taper shanks turned to fit sockets, which are so made as to be readily fitted to any drilling machine or lathe.

The steel-wire gage, as is well known, embraces 60 different sizes, from 4-100 to 23-100 of an inch. It was, therefore, important to have a tool that would hold all and each of these drills without any loss of time in adjusting them firmly and always true to the center.

The self-centering collet, patented May 4, 1864—an engraving of which is shown in Fig. 1—was designed and is manufactured by the Morse Twist Drill and Machine Company. This collet is made entirely of steel, and consists of only six pieces—the body, A, with slot, B, jaws, C and D, cam ring, E, plate, F, and screws, which hold the arm to the chuck. The jaws are accurately fitted to the slot, B; one is V-shaped on the inside, and the other fits into it; both are countersunk on the outside edge, so that when the conical end of the drill (see Fig. 3), is pressed against them, they will be easily pressed apart to receive it, thereby doing away with springs, which, on account of their liability to break, are objectionable. The cam ring fits over the body, A, and closes the jaws by being turned half round. This will hold the drills tight in most cases, if set up with the hand, but there is a wrench fitted to the chuck to be used as needed. The plate, F, covers the end of the body and jaws, and secures the latter from motion in that

Morse Twist Drill and Machine Co. All sizes of drills up to half-inch always on hand. The larger sizes and chucks furnished in small quantities at present; the company will soon have facilities, however, for furnishing all sizes as ordered. All orders should be addressed to S. A. Morse, Superintendent of the Morse Twist Drill Co., New Bedford, Mass.

**BARNES'S CRAVAT HOLDER.**

This invention is designed to relieve an annoyance common to the newly-invented paper or other garrote collars and the thin flimsy cravats so generally

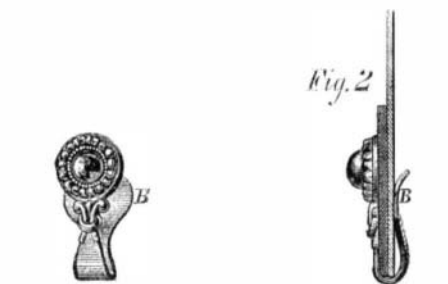
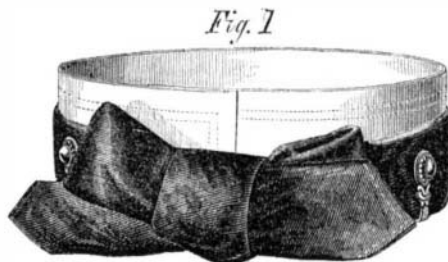
caught and firmly held. This pin is applied at either side of the bow, where it presents a highly unique appearance. With this attachment, no solicitude is caused, and bashful gentlemen may keep their hands off their clothing when in the presence of ladies, in perfect confidence that all is as it should be, and that they do not present a ridiculous spectacle by reason of the annoyance fully set forth previously.

This invention was patented through the Scientific American Patent Agency June 27, 1865, by W. S. Barnes. For further information address Barnes & Robinson, Providence, R. I.

**MARKET FOR THE MONTH.**

The prosperity mentioned last month continues, but there are signs of a gradual extension of credits. Some stocks, especially that of cotton, are accumulating, and there has been a check in the demand for cotton goods, which has caused a material fall in the price.

	Price Aug. 30.	Price Sept. 26.
Coal (Anth.) # 2,000 lb. . . . .	\$9 50 @ 10 50	\$12 00 @ 12 50
Coffee (Java) # lb. . . . .	26 @ 26½	29 @ 30
Copper (Am. Ingot) # lb. . . . .	30½ @ 32	32½ @ 33½
Cotton (middling) # lb. . . . .	44	44 @ 45½
Flour (State) # bbl. . . . .	\$6 80 @ 9 25	\$7 60 @ 8 35
Wheat # bush. . . . .	2 10 @ 2 40	2 15 @ 2 50
Hay # 100 lb. . . . .	60 @ 70	60 @ 65
Hemp (Am. drs'd) # tun. . . . .	270 00 @ 300 00	325 00 @ 350 00
Hides (city slaughter) # lb. . . . .	10 @ 10½	11½ @ 12
India-rubber # lb. . . . .	47½ @ 70	36 @ 70
Lead (Am.) # 100 lb. . . . .	9 25 @ 9 30	9 50 @ 9 62½
Nails # 100 lb. . . . .	5 50 @ 6 00	8 00
Petroleum (crude) # gal. . . . .	32	38 @ 38½
Beef (mess) # bbl. . . . .	8 00 @ 14 50	9 00 @ 15 50
Saltpeter # lb. . . . .	22	22
Steel (Am. cast) # lb. . . . .	13 @ 22	13 @ 22
Sugar (brown) # lb. . . . .	11 @ 16½	11½ @ 17½
Wool (American Saxony fleece) # lb. . . . .	75 @ 77	75 @ 77
Zinc # lb. . . . .	13½ @ 13½	14 @ 15
Gold. . . . .	1 44	1 44
Interest (loans on call) . . . . .	4 @ 4	5 @ 6



worn. Individuals who bedeck their persons in these attractive articles, are frequently humiliated and embarrassed by finding the cravat and collar endeavoring to change places—one surmounting the other. By the use of a simple ornamental appendage—shown

In Leiperville, Penn., there is a quarry so deep that when a teamster calls to his oxen a spectator on its bank hears nothing. A stone cast from the same bank occupies thirteen seconds in descending.